

Claims

- [c1] A vehicle safety system comprising:
at least one light source;
at least one beam-forming assembly optically coupled to said at least one light source;
at least one object detection sensor detecting at least one object and generating at least one object detection signal; and
a controller coupled to said at least one beam-forming assembly and said at least one object detection sensor and adjusting illumination output of the vehicle safety system in response to said object detection signal.
- [c2] A system as in claim 1 further comprising a memory coupled to said controller and storing a plurality of beam patterns, said controller selecting at least one of said beam patterns in response to said object detection signal.
- [c3] A system as in claim 1 wherein said controller in adjusting said illumination output adjusts an illumination parameter selected from at least one of beam pattern, beam location, beam intensity, beam focus, and beam angle.

- [c4] A system as in claim 1 wherein said at least one object detection sensor is a receiver and receives a communication signal from said at least one object, said controller adjusting said illumination output in response to said communication signal.
- [c5] A system as in claim 1 wherein said at least one object detection sensor is a passive object detection sensor.
- [c6] A system as in claim 1 wherein said at least one object detection sensor is selected from at least one of a radio frequency transceiver, a radio frequency receiver, a radio frequency sensor, an infrared transceiver, an infrared receiver, an infrared sensor, a laser transceiver, and a laser sensor.
- [c7] A system as in claim 1 further comprising a transmitter coupled to said controller and transmitting a first communication signal, said object detection sensor receiving a second communication signal in response to said first communication signal and adjusting said illumination output in response to said second communication signal.
- [c8] A system as in claim 1 wherein said controller adjusts said illumination output in response to at least one vehicle operating condition.

- [c9] A system as in claim 8 wherein said controller adjusts said illumination output in response to at least one vehicle operating condition selected from at least one of velocity, speed, directional heading, acceleration, location, steering wheel angle, brake status, throttle angle, turn signal status, traction control status, differential wheel speed, light status, turn indicator status, windshield wiper status, windshield wiper speed, and engine speed.
- [c10] A system as in claim 1 further comprising a navigation system coupled to said controller, said controller receiving information related to at least a portion of said at least one vehicle operating condition from said navigation system.
- [c11] A system as in claim 1 wherein said controller adjusts a vehicle state in response to said object detection signal.
- [c12] A system as in claim 11 wherein said controller in adjusting a vehicle state adjusts at least one vehicle state selected from velocity, speed, directional heading, acceleration, location, steering wheel angle, brake status, throttle angle, turn signal status, traction control status, differential wheel speed, light status, turn indicator status, windshield wiper status, windshield wiper speed, and engine speed.

- [c13] A system as in claim 11 wherein said object detection sensor receives a cruise control signal and said controller in response to said cruise control signal adjusts said vehicle state.
- [c14] A system as in claim 1 wherein said controller adjusts a cruise control parameter in response to said object detection signal.
- [c15] A system as in claim 1 further comprising at least one light emitter optically coupled to said at least one beam-forming assembly, said controller independently adjusting illumination output of each of said at least one light emitter.
- [c16] A system as in claim 1 wherein said object detection signal is generated in response to illumination generated from said at least one object.
- [c17] A system as in claim 1 wherein said object detection signal is generated in response at least one communicative light signal generated from said at least one object.
- [c18] A system as in claim 1 further comprising at least one light emitter optically coupled to said at least one beam-forming assembly and emitting a communicative light signal, said object detection sensor generating said object detection signal in response to said communicative

light signal.

- [c19] A vehicle headlight system comprising:
at least one light source;
at least one beam-forming assembly optically coupled to said at least one light source and forming an illumination beam;
a transceiver generating a first communication signal;
a receiver receiving a second communication signal from at least one object in response to said first communication signal; and
a controller coupled to said at least one beam-forming assembly and said receiver and adjusting said illumination beam in response to said second communication signal.
- [c20] A method of operating a vehicle headlight system comprising:
detecting at least one communication signal from at least one object; and
adjusting illumination output of the vehicle headlight system in response to said at least one communication signal.